

**CLAIM AMENDMENTS**

Please amend the claims (~~strike through~~ indicating deletion and underline indicating insertion) as follows:

1-24. (Canceled).

25. (Currently Amended) A method of immunizing an animal comprising administering to the animal a Chlamydia psittaci antigen having a sequence of SEQ ID NO:7 in an amount effective to induce ~~an~~ a protective immune response against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal, and wherein the amount effective is at least a nine-amino acid fragment of the SEQ ID NO:7.

26. (Withdrawn) The method of claim 25, wherein the provision of the at least one Chlamydia psittaci antigen comprises:

- (a) preparing a cloned expression library from fragmented genomic DNA, cDNA or sequenced genes of Chlamydia psittaci;
- (b) administering at least one clone of the library in a pharmaceutically acceptable carrier into the animal, wherein the at least one clone encodes the at least one Chlamydia psittaci antigen; and
- (c) expressing the at least one Chlamydia psittaci antigen, in the animal.

27. (Withdrawn) The method of claim 76, wherein, in addition to the at least one clone, the expression library comprises at least one or more additional clone having a sequence of SEQ ID NO:6, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID

NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, or SEQ ID NO:60, or fragment thereof.

28. (Canceled)

29. (Withdrawn) The method of claim 26, wherein the at least one clone is administered by an intramuscular injection or epidermal injection.

30. (Withdrawn) The method of claim 29, wherein the intramuscular injection is at least 1.0 ug to 200 ug of nucleic acid from the cloned expression library.

31. (Withdrawn) The method of claim 29, wherein a second intramuscular injection of epidermal injection is administered at least about three weeks after the first injection.

32. (Withdrawn) The method of claim 25, wherein the provision of the *Chlamydia psittaci* antigen(s) comprises:

- (a) obtaining at least one polynucleotide having a sequence encoding a *Chlamydia psittaci* antigen;
- (b) administering the polynucleotide to the animal; and
- (c) expressing the one or more *Chlamydia psittaci* antigen in the animal.

33. (Withdrawn) The method of claim 78, wherein the at least one *Chlamydia psittaci* antigen has a sequence of SEQ ID NO:7 or an antigenic fragment thereof.
34. (Withdrawn) The method of claim 78, further comprising administering to the animal at least a second polynucleotide encoding a second *Chlamydia psittaci* antigen.
35. (Withdrawn) The method of claim 34, wherein the second polynucleotide is further defined as encoding a second *Chlamydia psittaci* antigen having a sequence of SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, or an antigenic fragment thereof.
36. (Withdrawn) The method of claim 32, wherein the polynucleotide is administered by a first intramuscular injection or epidermal injection.
37. (Withdrawn) The method of claim 36, wherein the polynucleotide is administered by a second intramuscular injection or epidermal injection.
38. (Withdrawn) The method of claim 37, wherein the intramuscular injection is at least 1.0 ug to 200 ug of the polynucleotide.
39. (Previously Presented) The method of claim 25, comprising preparing a pharmaceutical

composition of the Chlamydia psittaci antigen.

40. (Canceled)

41. (Currently Amended) The method of claim 25 further comprising administering to the animal at least a second Chlamydia psittaci antigen, wherein the second Chlamydia psittaci antigen has the effect of increasing the protective capacity against Chlamydia psittaci-induced disease and accelerating the elimination of the Chlamydia psittaci bacteria from an infected animal.

42. (Currently Amended) The method of claim 41, wherein the second Chlamydia psittaci antigen ~~has~~ is at least a nine amino acid fragment having a sequence of SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, or SEQ ID NO:61.

43. (Original) The method of claim 25, wherein the animal is a mammal.

44. (Previously Presented) The method of claim 43, wherein the mammal is a bovine.

45. (Previously Presented) The method of claim 43, wherein the mammal is a human.

46-49. (Canceled)

50. (Withdrawn) The method of claim 25, further comprising administering to the animal an antigen from a Chlamydia species other than Chlamydia psittaci.

51. (Withdrawn) The method of claim 25, further comprising administering to the animal an antigen from a non-Chlamydia species.

52. (Withdrawn) A method of obtaining polynucleotide sequences effective for generating an immune response against the genus Chlamydia in an animal comprising:

- (a) preparing a cloned expression library from a fragmented genomic DNA of the genus Chlamydia;
- (b) administering one or more clones of the library in a pharmaceutically acceptable carrier into the animal in an amount effective to induce an immune response; and
- (c) selecting from the library the polynucleotide sequences that induce an immune response,

Wherein the immune response in the animal is protective against Chlamydia infection.

53. (Withdrawn) The method of claim 52, further comprising testing the animal for immune resistance against a Chlamydia bacterial infection by challenging the animal with Chlamydia.

54. (Withdrawn) The method of claim 52, wherein the genomic DNA is fragmented physically or by restriction enzymes.

55. (Withdrawn) The method of claim 54, wherein the fragments are, on average, about 200-1000 base pairs in length.

56. (Withdrawn) The method of claim 52, wherein each clone in the library comprises a gene encoding a mouse ubiquitin fusion polypeptide designed to line the expression library

polynucleotides to the ubiquitin gene.

57. (Withdrawn) The method of claim 52, wherein the library is about  $1 \times 10^3$  to about  $1 \times 10^6$  clones.

58. (Withdrawn) The method of claim 57, wherein the library is  $1 \times 10^5$  clones.

59. (Withdrawn) The method of claim 52, wherein about 0.01 ug to about 200 ug of DNA, cDNA or sequenced gene from the clones is administered into the animal.

60. (Withdrawn) The method of claim 59, wherein the genomic DNA, cDNA or sequenced gene is introduced by intramuscular injection or epidermal injection.

61. (Withdrawn) The method of claim 52, wherein the fragmented genomic DNA, cDNA or sequenced genes of Chlamydia further comprises a promoter operably linked to the DNA that permits expression in a vertebrate animal cell.

62-73. (Canceled)

74. (Previously Presented) The method claim 25, wherein the Chlamydia psittaci antigen is further defined as having a sequence of SEQ ID NO:9.

75. (Canceled)

76. (Withdrawn) The method of claim 26, wherein the at least one clone, has a sequence of SEQ ID NO:8 or fragment thereof.

77. (Withdrawn) The method of claim 76, wherein the at least one clone comprising a nucleic acid sequence of SEQ ID NO:8 or a fragment thereof is further defined as comprising a nucleic acid sequence of SEQ ID NO:6 or a fragment thereof.

78. (Withdrawn) The method of claim 32, wherein the provision of the *Chlamydia psittaci* antigen(s) is further defined as further comprising:

- (a) obtaining at least one polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:9 or an antigenic fragment thereof comprising at least 25 contiguous amino acid residues of SEQ ID NO:9;
- (b) administering the polynucleotide to the animal; and
- (c) expressing the one or more *Chlamydia psittaci* antigen having a sequence of SEQ ID NO:9 or an antigenic fragment thereof in the animal.

79. (Withdrawn) The method of claim 78, wherein the polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:9 or antigenic fragment thereof has a sequence of SEQ ID NO:8 or fragment thereof.

80. (Withdrawn) The method of claim 33, wherein the polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:7 or antigenic fragment thereof is further

defined as having a sequence of SEQ ID NO:6 or fragment thereof.

81. (Withdrawn) The method of claim 35, wherein the second polynucleotide has a sequence of SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, or fragment thereof.

82. (Canceled)

83. (Previously Presented) The method of claim 42, wherein the second *Chlamydia psittaci* antigen is further defined as having a sequence of SEQ ID NO:13.

84-91. (Canceled)

92. (Previously Presented) A method of immunizing an animal comprising the steps of:  
preparing a *Chlamydia psittaci* antigen; and  
administering the *Chlamydia psittaci* antigen to an animal in an amount effective to induce an immune response against *Chlamydia psittaci*; wherein the *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ ID NO: 9.

93. (Previously Presented) The method of claim 92, wherein the *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ ID NO:7.

94. (Previously Presented) The method of claim 92, wherein the method further comprises the steps of:



preparing a second Chlamydia psittaci antigen; and  
administering the second Chlamydia psittaci antigen to an animal in an amount effective to induce an immune response against Chlamydia psittaci; wherein the second Chlamydia psittaci antigen comprises the amino acid sequence as set forth as SEQ ID NO: 7, 11, 13, 17, 23, or 27.

95. (Previously Presented) The method of claim 93, wherein the method further comprises the steps of:

preparing a second Chlamydia psittaci antigen; and  
administering the second Chlamydia psittaci antigen to an animal in an amount effective to induce an immune response against Chlamydia psittaci; wherein the second Chlamydia psittaci antigen comprises the amino acid sequence as set forth as SEQ ID NO: 11, 13, 17, 23 or 27.

96. (Currently Amended) The method of claim 92 wherein the Chlamydia psittaci antigen comprises ~~variants~~ a variant of the amino acid sequence as set forth as SEQ ID NO: 9 that ~~are~~ is at least ~~80% identical to the amino acid sequence as set forth as~~ a nine-amino acid fragment of a sequence homologous to SEQ ID NO: 9 and that induces ~~an~~ a protective immune response ~~in an animal to~~ against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease, and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal.

97. (Currently Amended) The method of claim 93 wherein the Chlamydia psittaci antigen comprises ~~variants~~ a variant of the amino acid sequence as set forth as SEQ ID NO: 7 that ~~are~~ is at least ~~80% identical to the amino acid sequence as set forth as~~ a nine-amino acid fragment of a sequence homologous to SEQ ID NO: 7 and that induces ~~an~~ a protective immune response ~~in an animal to~~ against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease, and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal.

98. (Currently Amended) The method of claim 94 wherein the Chlamydia psittaci antigen comprises ~~variants~~ a variant of the amino acid sequence as set forth as SEQ ID NO: 7, 11, 13, 17, 23, or 27 that ~~are~~ is at least 80% identical to the amino acid sequence as set forth as a nine-amino acid fragment of a sequence homologous to SEQ ID NO: 7, 11, 13, 17, 23, or 27 and that induces an a protective immune response in an animal to against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease, and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal.

99. (Currently Amended) The method of claim 95 wherein the Chlamydia psittaci antigen comprises ~~variants~~ a variant of the amino acid sequence as set forth as SEQ ID NO: 11, 13, 17, 23, or 27 that ~~are~~ is at least 80% identical to the amino acid sequence as set forth as a nine-amino acid fragment of a sequence homologous to SEQ ID NO: 11, 13, 17, 23, or 27 and that induces an a protective immune response in an animal to against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease, and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal.

100. (Currently Amended) The method of claim 92 wherein the Chlamydia psittaci antigen comprises a fragment of the amino acid sequence as set forth as SEQ ID NO: 9 that induces ~~an a~~ a protective immune response in an animal to against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal, and wherein the fragment is at least a nine-amino acid sequence of SEQ ID NO:9.

101. (Currently Amended) The method of claim 93 wherein the Chlamydia psittaci antigen comprises a fragment of the amino acid sequence as set forth as SEQ ID NO: 7 that induces ~~an a~~ a protective immune response in an animal to against Chlamydia psittaci, wherein the immune

response protects against Chlamydia psittaci-induced disease and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal, and wherein the fragment is at least a nine-amino acid sequence of SEQ ID NO:7.

102. (Currently Amended) The method of claim 94 wherein the Chlamydia psittaci antigen comprises a fragment of the amino acid sequence as set forth as SEQ ID NO: 7, 11, 13, 17, 23, or 27 that induces ~~an~~ a protective immune response ~~in an animal to~~ against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal, and wherein the fragment is at least a nine-amino acid sequence of SEQ ID NO: 7, 11, 13, 17, 23, or 27.

103. (Currently Amended) The method of claim 95 wherein the Chlamydia psittaci antigen comprises a fragment of the amino acid sequence as set forth as SEQ ID NO: 11, 13, 17, 23, or 27 that induces ~~an~~ a protective immune response ~~in an animal to~~ against Chlamydia psittaci, wherein the immune response protects against Chlamydia psittaci-induced disease and accelerates elimination of the Chlamydia psittaci bacteria from an infected animal, and wherein the fragment is at least a nine-amino acid sequence of SEQ ID NO: 11, 13, 17, 23, or 27.

104. (Previously Presented) The method of claim 92 wherein the step of preparing a Chlamydia psittaci antigen further comprises preparing the Chlamydia psittaci antigen in a pharmaceutically acceptable carrier.

105. (Previously Presented) The method of claim 94 wherein the steps of preparing a Chlamydia psittaci antigen and preparing a second Chlamydia psittaci antigen further comprises preparing the Chlamydia psittaci antigen and the second Chlamydia psittaci antigen in a pharmaceutically acceptable carrier.

106. (Previously Presented) The method of claim 95 wherein the steps of preparing a Chlamydia psittaci antigen and preparing a second Chlamydia psittaci antigen further comprises preparing the Chlamydia psittaci antigen and the second Chlamydia psittaci antigen in a pharmaceutically acceptable carrier.
107. (Previously Presented) The method of claim 92 wherein the animal is a bovine.
108. (Previously Presented) The method of claim 94 wherein the animal is a bovine.
109. (Previously Presented) The method of claim 95 wherein the animal is a bovine.
110. (Previously Presented) The method of claim 92 wherein the animal is a human.
111. (Previously Presented) The method of claim 94 wherein the animal is a human.
112. (Previously Presented) The method of claim 95 wherein the animal is a human.
113. (Previously Presented) The method of claim 92 wherein the animal is a mammal.
114. (Previously Presented) The method of claim 94 wherein the animal is a mammal.
115. (Previously Presented) The method of claim 95 wherein the animal is a mammal.